



DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[RTID 0648-XB758]

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to New England Wind, Phase 1 Park City Wind Marine Site Characterization Surveys

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice; proposed incidental harassment authorization; request for comments on proposed authorization and possible renewal.

SUMMARY: NMFS has received a request from Park City Wind LLC (PCW) for authorization to take marine mammals incidental to marine site characterization surveys for Phase 1 of the New England Wind Project located in the Bureau of Ocean Energy Management (BOEM) Lease Area OCS-A 0534 (Lease Area) in waters offshore of Massachusetts south through Long Island, New York. Pursuant to the Marine Mammal Protection Act (MMPA), NMFS is requesting comments on its proposal to issue an incidental harassment authorization (IHA) to incidentally take marine mammals during the specified activities. NMFS is also requesting comments on a possible one-time, one-year renewal that could be issued under certain circumstances and if all requirements are met, as described in **Request for Public Comments** at the end of this notice. NMFS will consider public comments prior to making any final decision on the issuance of the requested MMPA authorizations and agency responses will be summarized in the final notice of our decision.

DATES: Comments and information must be received no later than [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: Comments should be addressed to Jolie Harrison, Chief, Permits and Conservation Division, Office of Protected Resources, National Marine Fisheries Service, and should be submitted via email to *ITP.Potlock@noaa.gov*.

Instructions: NMFS is not responsible for comments sent by any other method, to any other address or individual, or received after the end of the comment period.

Comments, including all attachments, must not exceed a 25-megabyte file size. All comments received are a part of the public record and will generally be posted online at *www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act* without change. All personal identifying information (*e.g.*, name, address) voluntarily submitted by the commenter may be publicly accessible. Do not submit confidential business information or otherwise sensitive or protected information.

FOR FURTHER INFORMATION CONTACT: Kelsey Potlock, Office of Protected Resources, NMFS, (301) 427-8401. Electronic copies of the application and supporting documents, as well as a list of the references cited in this document, may be obtained online at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-other-energy-activities-renewable*. In case of problems accessing these documents, please call the contact listed above.

SUPPLEMENTARY INFORMATION:

Background

The MMPA prohibits the “take” of marine mammals, with certain exceptions. Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 *et seq.*) direct the Secretary of Commerce (as delegated to NMFS) to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and either regulations are issued or, if the taking is

limited to harassment, a notice of a proposed incidental take authorization may be provided to the public for review.

Authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s) and will not have an unmitigable adverse impact on the availability of the species or stock(s) for taking for subsistence uses (where relevant). Further, NMFS must prescribe the permissible methods of taking and other “means of effecting the least practicable adverse impact” on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stocks for taking for certain subsistence uses (referred to in shorthand as “mitigation”); and requirements pertaining to the mitigation, monitoring and reporting of the takings are set forth. The definitions of all applicable MMPA statutory terms cited above are included in the relevant sections below.

National Environmental Policy Act

To comply with the National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. 4321 *et seq.*) and NOAA Administrative Order (NAO) 216-6A, NMFS must review our proposed action (*i.e.*, the issuance of an IHA) with respect to potential impacts on the human environment.

This action is consistent with categories of activities identified in Categorical Exclusion B4 (IHAs with no anticipated serious injury or mortality) of the Companion Manual for NOAA Administrative Order 216-6A, which do not individually or cumulatively have the potential for significant impacts on the quality of the human environment and for which we have not identified any extraordinary circumstances that would preclude this categorical exclusion. Accordingly, NMFS has preliminarily determined that the issuance of the proposed IHA qualifies to be categorically excluded from further NEPA review.

NMFS will review all comments submitted in response to this notice prior to concluding our NEPA process or making a final decision on the IHA request.

Summary of Request

On December 17, 2021, NMFS received a request from PCW for an IHA to take marine mammals incidental to marine site characterization surveys for Phase 1 of the New England Wind Project located in the Bureau of Ocean Energy Management (BOEM) Lease Area OCS-A 0534 (Lease Area) in waters offshore of Massachusetts south through Long Island, New York. Following NMFS' review of the draft application, revised versions were submitted on February 14, 2022 and March 25, 2022. The March 2022 revised version was deemed adequate and complete March 25, 2022. PCW's request is for take of 16 species of marine mammals, by Level B harassment only. Neither PCW nor NMFS expects serious injury or mortality to result from this activity and, therefore, an IHA is appropriate. The proposed IHA would be effective for one year upon issuance.

Description of Proposed Activity

Overview

New England Wind is located in the BOEM Lease Area OCS-A 0534 and is comprised of Phase 1 PCW and Phase 2 Commonwealth Wind (CW), along with associated offshore and onshore cabling, onshore substations, and onshore operations and maintenance (O&M) facilities (Figure 1). Phase 2 is not part of this application. As part of its overall marine site characterization survey operations, PCW proposes to conduct high-resolution geophysical (HRG) surveys in the Lease Area.

The purpose of the marine site characterization surveys are to obtain an assessment of seabed (geophysical, geotechnical, and geohazard), ecological, and archeological conditions within the footprint of a planned offshore wind facility development area. Underwater sound resulting from PCW's proposed site

characterization survey activities, specifically HRG surveys, has the potential to result in incidental take of marine mammals in the form of Level B harassment.

Dates and Duration

PCW anticipates that HRG survey activities would occur on approximately 636 vessel days, with an assumed daily survey distance of 80 km per vessel. This schedule is based on assumed 24-hour operations. Each day that a vessel surveys approximately 80 km within 24 hours would count as a single survey day, *e.g.*, two survey vessels operating on the same day would count as two survey days. The use of concurrently surveying vessels would facilitate completion of all 636 vessel days within one year. PCW proposes to begin survey activities upon receipt of an IHA and continue for up to one year (though the actual duration will likely be shorter, particularly given the use of multiple vessels). The IHA would be effective for one year from the date of issuance. Site characterization activities within the Potential Survey Area are anticipated to begin May 2022 and will last up to one year with a total of 636 active sound source days. The number of active sound source days was calculated by dividing the total survey trackline (50,880 kilometers (km)) by the approximate survey distance per day (80 km) anticipated to be achieved. Survey operations are proposed to be conducted 24 hours per day to minimize the overall duration of survey activities and the associated period of potential impact on marine species. While the HRG survey activities are estimated to occur over the course of a full year, the actual survey duration will be shorter given the use of multiple vessels.

Specific Geographic Region

HRG survey activities are proposed to occur in both Federal offshore waters (including Lease Area OCS-A 0534) and along potential OECCs in both Federal and State nearshore waters of Massachusetts, Rhode Island, Connecticut, and New York. The proposed survey will be acquired within the area illustrated in Figure 1. Water depths in

the lease area range from about 35 to 60 meters (m) (115 to 197 feet (ft)). Water depths along the potential OECCs range from 2.5 m to >35 m (8 to >115 ft).

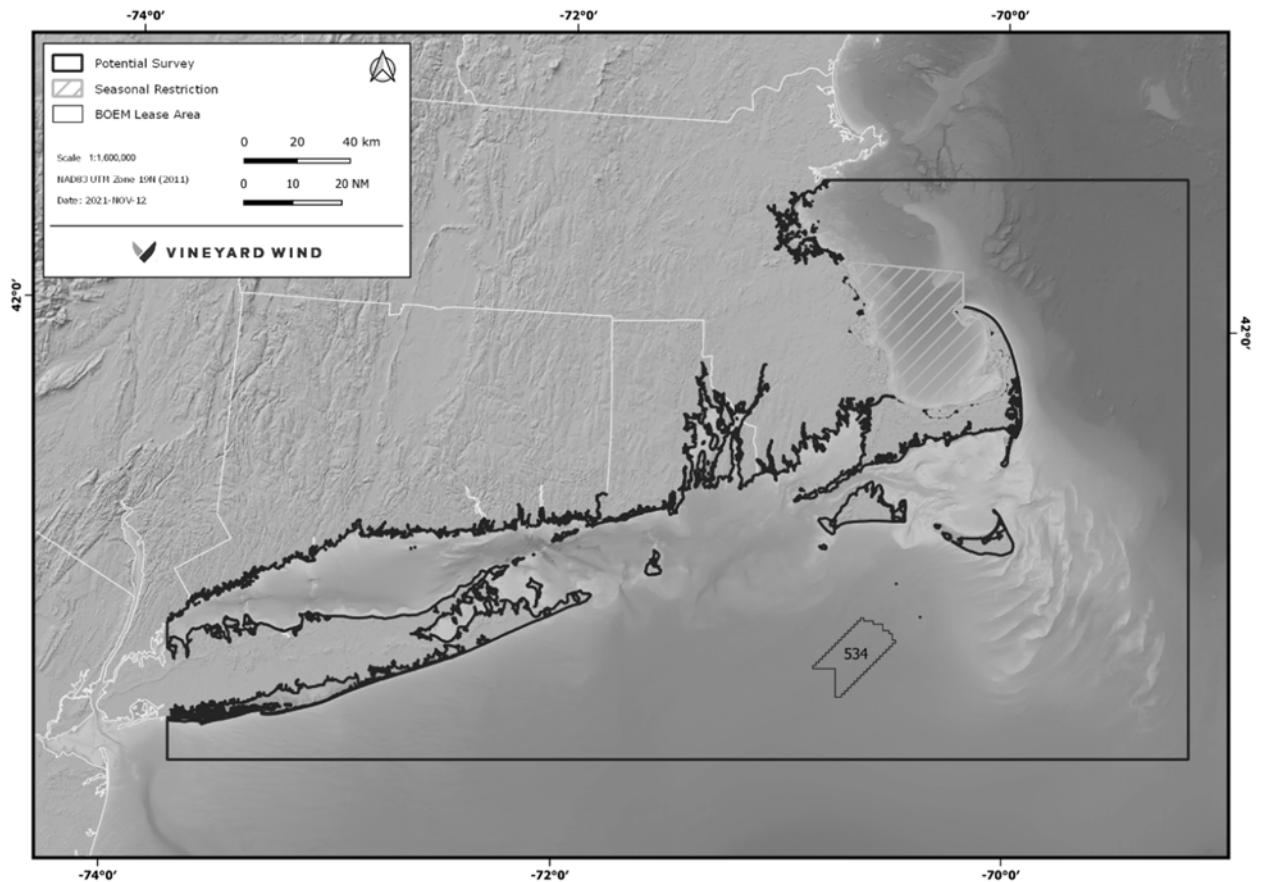


Figure 1 -- Proposed HRG survey area.

Detailed Description of Specific Activity

PCW proposes to conduct HRG survey operations, which may include single and multibeam depth sounding, seafloor imaging, and shallow and medium penetration sub-bottom profiling. The HRG surveys may be conducted using any or all of the following equipment types: side scan sonar, multibeam echosounder, magnetometers and gradiometers, parametric sub-bottom profiler (SBP), compressed high intensity radar pulse (CHIRP) SBP, boomers, or sparkers. Vessels would generally conduct survey effort at a transit speed of approximately 4 knots (kn; 2.1 meters per sec, m/s), which equates to 110 km per 24-hr period. However, based on past survey experience (*i.e.*, knowledge of typical daily downtime due to weather, system malfunctions, etc.), PCW assumes 80 km

as the average distance surveyed per 24 hours. On this basis (and as mentioned previously), a total of 636 survey days are expected.

To facilitate completion of all 636 survey days across the survey area (see Figure 1) within one year, PCW proposes to use multiple vessels to acquire the HRG survey data. Up to three HRG vessels are currently proposed to operate concurrently within the survey area. HRG survey activities will be conducted by vessels that can accomplish the survey goals in specific survey areas. Each vessel will maintain both the required course and a survey speed required to cover approximately 80 km (43 nm) per day during line acquisition, with consideration to weather delays, equipment maintenance, and crew availability. Vessel survey speed is anticipated to be approximately 4 knots (2.1 m/s)..

Acoustic sources planned for use during the proposed HRG survey activities include the following (operating frequencies are presented in hertz (Hz) and kilohertz (kHz)):

- Shallow penetration non-impulsive, non-parametric sub-bottom profilers (*i.e.*, CHIRP SBPs) are used to map the near-surface stratigraphy (top 0 to 5 m (0 to 16 feet (ft))) of sediment below seabed). A CHIRP system emits sonar pulses that increase in frequency from about 2 to 20 kHz over time. The frequency range can be adjusted to meet project variables. Rather than being towed, these sources are typically mounted on a pole or the hull of the vessel, reducing the likelihood that an animal would be exposed to the signal; and,
- Medium penetration, impulsive sources (*i.e.*, boomers and sparker) are used to map deeper subsurface stratigraphy. A boomer is a broadband source operating in the 3.5 Hz to 10 kHz frequency range. Sparkers create omnidirectional acoustic pulses from 50 Hz to 4 kHz that can penetrate

several hundred meters into the seafloor. These sources are typically towed behind the vessel.

Operation of the following survey equipment types is not expected to present reasonable risk of marine mammal take, and will not be discussed further beyond the brief summaries provided below.

- Non-impulsive, parametric SBPs are used for providing high density data in sub-bottom profiles that are typically required for cable routes, very shallow water, and archaeological surveys. These sources generate short, very narrow-beam (1° to 3.5°) signals at high frequencies (generally around 85-100 kHz). The narrow beamwidth significantly reduces the potential that a marine mammal could be exposed to the signal, while the high frequency of operation means that the signal is rapidly attenuated in seawater. These sources are typically mounted on the hull of the vessel or deployed from a side pole rather than towed behind the vessel.
- Ultra-short baseline (USBL) positioning systems are used to provide high accuracy ranges by measuring the time between the acoustic pulses transmitted by the vessel transceiver and a transponder (or beacon) necessary to produce the acoustic profile. It is a two-component system with a pole-mounted transceiver and one or several transponders mounted on other survey equipment. USBLs are expected to produce extremely small acoustic propagation distances in their typical operating configuration.
- Single and Multibeam echosounders (MBESs) are used to determine water depths and general bottom topography. The proposed MBESs all have operating frequencies > 180 kHz and are therefore outside the general hearing range of marine mammals.
- Side scan sonar (SSS) is used for seabed sediment classification purposes and to identify natural and man-made acoustic targets on the seafloor. The proposed SSSs all have operating frequencies > 180 kHz and are therefore outside the general hearing range of marine mammals.

HRG survey activities will occur in discrete segments corresponding to the following general areas:

- Lease Area OCS-A 0534 – Inclusive of potential wind turbine generator (WTG) locations, electrical service platform (ESP) location(s), and inter-array cable corridors; and
- OECC route – One or more potential OECC routes through Federal and State waters located within the Potential Survey Area from northern Massachusetts to Long Island as shown in Figure 1.

The maximum survey area has been selected to provide operational flexibility and to cover the possibility of multiple landfall locations associated with the OECC. Track line spacing for HRG survey activities will align with BOEM Guidelines for Providing Archaeological and Historic Property Information pursuant to 30 CFR § Part 585 (March 2017) and for Providing Geophysical, Geotechnical, and Geohazard Information pursuant to 30 CFR § Part 585 (July 2015) (BOEM 2015). Surveys are planned to support standard geophysical, geotechnical, and geohazard investigations as well as potential unexploded ordnance (UXO) and benthic habitat studies.

Table 1--Summary of Representative HRG Equipment

Equipment	System	Frequency (kHz)	Beam width (°)	Pulse duration (ms)	Repetitio n rate (Hz)	In-beam		Correct ion (dB)	Out-of-beam	
						Source level (dB re 1 µPa m)	Peak source level (dB re 1 µPa m)		Sourc e level (dB re 1 µPa m)	Peak source level (dB re 1 µPa m)
Shallow subbottom profiler	EdgeTech Chirp 216	2–16	65	2	3.75	178	182	-8.1	169.9	173.9
Deep seismic profiler	Applied Acoustics AA251 Boomer	0.2–15	180	0.8	2	205	212	0.0	205.0	212.0
	GeoMarine Geo Spark 2000 (400 tip)	0.05–3	180	3.4	1	203	213	0.0	203.0	213.0

Note: Edge Tech Chirp 512i used as proxy source for Edge Tech 216, as Chirp 512i has similar operation settings as Chirp 216. SIG ELC 820 Sparker used as proxy for GeoMarine Geo Spark 2000 (400 tip), as SIG ELC 820 has similar operation settings as Geo Spark 2000. See Crocker and Fratantonio (2016) and Appendix A of PCW's application for more information.

dB – decibel, RMS – Root mean square, 1 µPa - 1 microPascal Proposed mitigation, monitoring,

and reporting measures are described in detail later in this document (please see

Proposed Mitigation and Proposed Monitoring and Reporting).

Description of Marine Mammals in the Area of Specified Activities

Sections 3 and 4 of the application summarize available information regarding status and trends, distribution and habitat preferences, and behavior and life history, of the potentially affected species. Additional information regarding population trends and threats may be found in NMFS' Stock Assessment Reports (SARs; www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments) and more general information about these species (*e.g.*, physical and behavioral descriptions) may be found on NMFS' website (www.fisheries.noaa.gov/find-species).

Table 2 lists all species or stocks for which take is expected and proposed to be authorized for this action, and summarizes information related to the population or stock, including regulatory status under the MMPA and Endangered Species Act (ESA) and potential biological removal (PBR), where known. For taxonomy, NMFS follows the

Committee on Taxonomy (2021). PBR is defined by the MMPA as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population (as described in NMFS' SARs). While no mortality is anticipated or would be authorized here, PBR and annual serious injury and mortality from anthropogenic sources are included as gross indicators of the status of the species and other threats.

Marine mammal abundance estimates presented in this document represent the total number of individuals that make up a given stock or the total number estimated within a particular study or survey area. NMFS' stock abundance estimates for most species represent the total estimate of individuals within the geographic area, if known, that comprises that stock. For some species, this geographic area may extend beyond U.S. waters. All managed stocks in this region are assessed in NMFS' U.S. Atlantic and Gulf of Mexico SARs. All values presented in Table 2 are the most recent available at the time of publication and are available in the Draft 2021 SARs (Hayes *et al.*, 2021), available at: <https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports>.

Table 2--Marine Mammal Species Likely To Occur Near the Project Area That May be Affected by PCW's Activity

Common name	Scientific name	Stock	ESA/MMPA status; Strategic (Y/N) ¹	Stock abundance (CV, N _{min} , most recent abundance survey) ²	PBR	Annual M/SI ³
Order Cetartiodactyla – Cetacea – Superfamily Mysticeti (baleen whales)						
Family Balaenidae						
North Atlantic right whale ⁴	<i>Eubalaena glacialis</i>	Western North Atlantic (WNA)	E/D; Y	368 (0; 364; 2019)	0.7	7.7
Family Balaeopteridae (rorquals)						

Humpback whale	<i>Megaptera novaeangliae</i>	Gulf of Maine	-/-; Y	1,393 (0.15; 1,375; 2016)	22	58
Fin whale	<i>Balaenoptera physalus</i>	WNA	E/D; Y	6,802 (0.24; 5,573; 2016)	11	2.35
Sei whale	<i>Balaenoptera borealis</i>	Nova Scotia	E/D; Y	6,292 (1.02; 3,098; 2016)	6.2	1.2
Minke whale	<i>Balaenoptera acutorostrata</i>	Canadian East Coast	-/-; N	21,968 (0.31; 17,002; 2016)	170	10.6
Blue whale	<i>Balaenoptera musculus</i>	WNA	E/D; Y	Unknown (unknown; 402; 2019)	0.8	0
Superfamily Odontoceti (toothed whales, dolphins, and porpoises)						
Family Physeteridae						
Sperm whale	<i>Physeter macrocephalus</i>	North Atlantic	E/D; Y	4,349 (0.28;3,451; 2016)	3.9	0
Family Delphinidae						
Long-finned pilot whale	<i>Globicephala melas</i>	WNA	-/-; N	39,215 (0.30; 30,627; 2016)	306	29
Short finned pilot whale	<i>Globicephala macrorhynchus</i>	WNA	-/-; N	28,924 (0.24; 23,637; 2016)	236	136
Bottlenose dolphin	<i>Tursiops truncatus</i>	WNA Offshore	-/-; N	62,851 (0.23; 51,914; 2016)	519	28
		WNA Northern Migratory Coastal	-/D;Y	6,639 (0.41, 4,759, 2016)	48	12.2-21.5
Common dolphin	<i>Delphinus delphis</i>	WNA	-/-; N	172,974 (0.21; 145,216; 2016)	1,452	390
Atlantic white-sided dolphin	<i>Lagenorhynchus acutus</i>	WNA	-/-; N	93,233 (0.71; 54,443; 2016)	544	27
Atlantic spotted dolphin	<i>Stenella frontalis</i>	WNA	-/-; N	39,921 (0.27; 32,032; 2016)	320	0
Risso's dolphin	<i>Grampus griseus</i>	WNA	-/-; N	35,215 (0.19; 30,051; 2016)	303	54.3
Family Phocoenidae (porpoises)						

Harbor porpoise	<i>Phocoena phocoena</i>	Gulf of Maine/Bay of Fundy	-/-; N	95,543 (0.31; 74,034; 2016)	851	164
Order Carnivora – Superfamily Pinnipedia						
Family Phocidae (earless seals)						
Gray seal ⁵	<i>Halichoerus grypus</i>	WNA	-/-; N	27,300 (0.22; 22,785, 2029)	1,458	4,453
Harbor seal	<i>Phoca vitulina</i>	WNA	-/-; N	61,336 (0.08; 57,637, 2020)	1,729	339

¹ESA status: Endangered (E), Threatened (T) / MMPA status: Depleted (D). A dash (-) indicates that the species is not listed under the ESA or designated as depleted under the MMPA. Under the MMPA, a strategic stock is one for which the level of direct human-caused mortality exceeds PBR or which is determined to be declining and likely to be listed under the ESA within the foreseeable future. Any species or stock listed under the ESA is automatically designated under the MMPA as depleted and as a strategic stock.

²NMFS marine mammal stock assessment reports online at: www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments. CV is coefficient of variation; Nmin is the minimum estimate of stock abundance. In some cases, CV is not applicable.

³These values, found in NMFS' SARs, represent annual levels of human-caused mortality plus serious injury from all sources combined (e.g., commercial fisheries, ship strike).

⁴The draft 2022 SARs have yet to be released; however, NMFS has updated its species webpage to recognize the population estimate for NARWs is now below 350 animals (<https://www.fisheries.noaa.gov/species/north-atlantic-right-whale>).

⁵NMFS' gray seal stock abundance estimate (and associated PBR value) applies to U.S. population only. Total stock abundance (including animals in Canada) is approximately 450,000. The annual M/SI value given is for the total stock.

As indicated above, all 16 species in Table 2 temporally and spatially co-occur with the activity to the degree that take is reasonably likely to occur. In addition to what is included in Sections 3 and 4 of the application, the SARs, and NMFS' website, further detail informing the baseline for select species (*i.e.*, information regarding current Unusual Mortality Events (UME) and important habitat areas) is provided below.

North Atlantic right whale

The North Atlantic right whale (NARW) is considered one of the most critically endangered populations of large whales in the world and has been listed as a Federal endangered species since 1970. The Western Atlantic stock is considered depleted under the MMPA (Hayes *et al.* 2021). There is a recovery plan (NOAA Fisheries 2017) for the NARW and recently there was a five-year review of the species (NOAA Fisheries 2017). The NARW had a 2.8 percent recovery rate between 1990 and 2011 (Hayes *et al.* 2021).

Elevated NARW mortalities have occurred since June 7, 2017, along the U.S. and Canadian coast with the leading category for the cause of death for this UME as “human interaction,” specifically from entanglements or vessel strikes. As of April 11, 2022, a total of 34 confirmed dead stranded whales (21 in Canada; 13 in the United States) have been documented. The cumulative total number of animals in the NARW UME has been updated to 50 individuals to include both the confirmed mortalities (dead stranded or floaters) (n=34) and seriously injured free-swimming whales (n=16) to better reflect the confirmed number of whales likely removed from the population during the UME and more accurately reflect the population impacts. More information is available online at: <https://www.fisheries.noaa.gov/national/marine-life-distress/2017-2022-north-atlantic-right-whale-unusual-mortality-event>.

NMFS’ regulations at 50 CFR part 224.105 designated nearshore waters of the Mid-Atlantic Bight as Mid-Atlantic U.S. Seasonal Management Areas (SMAs) for North Atlantic right whales in 2008. SMAs were developed to reduce the threat of collisions between ships and North Atlantic right whales around their migratory route and calving grounds. The survey area overlaps with the Cape Cod Bay (active between January 1 and May 15), Off Race Point (active between March 1 and April 30), Great South Channel (active between April 1 and July 31), and Mid-Atlantic Migratory (active between November 1 and April 30) SMAs.

The proposed survey area also partially overlaps with the North Atlantic right whale feeding Biologically Important Areas (BIAs). One feeding BIA is located north of the HRG Survey Area at Cape Cod Bay and Massachusetts Bay and occurs from February-April, and another is located northeast of the HRG Survey Area in the Great South Channel, from April-June. The proposed survey also overlaps with part of the migratory corridor BIA for North Atlantic right whales (March-April and November-December) that extends from the coast to the continental shelf break, and from

Massachusetts to Florida (LeBrecque *et al.*, 2015). A map showing designated BIAs is available at: <https://cetsound.noaa.gov/biologically-important-area-map>. In addition to currently designated feeding BIAs, Oleson *et al.* (2020) identified the area south of Martha's Vineyard and Nantucket, referred to as "South of the Islands," as a newer, year-round, core North Atlantic right whale foraging habitat. The South of the Islands area is also within the bounds of the proposed survey area.

There are two designated critical habitat areas for the NARW, one of which overlaps the project area: the Gulf of Maine/Georges Bank region is located northeast of the HRG survey area, but parts of it overlap the proposed survey area, and the southeast calving grounds from North Carolina to Florida (NMFS 2016a) which does not overlap the survey area. All vessels greater than 19.8 m (65 ft) in overall length must operate at speeds of 10 knots (5.1 meters per second (m/s)) or less within these areas during specific time periods.

Humpback Whale

NMFS recently evaluated the status of the species, and on September 8, 2016, NMFS divided the species into 14 distinct population segments (DPS), removed the species-level listing, and in its place listed four DPSs as endangered and one DPS as threatened (81 FR 62260; September 8, 2016). The remaining nine DPSs were not listed. The West Indies DPS, which is not listed under the ESA, is the only DPS of humpback whale that is expected to occur in the survey area. Bettridge *et al.* (2015) estimated the size of this population at 12,312 (95 percent CI 8,688-15,954) whales in 2004-05, which is consistent with previous population estimates of approximately 10,000-11,000 whales (Stevick *et al.*, 2003; Smith *et al.*, 1999) and the increasing trend for the West Indies DPS (Bettridge *et al.*, 2015). Whales occurring in the survey area are considered to be from the West Indies DPS, but are not necessarily from the Gulf of Maine feeding population managed as a stock by NMFS. Barco *et al.*, 2002 estimated that, based on photo-

identification, only 39 percent of individual humpback whales observed along the mid- and south Atlantic U.S. coast are from the Gulf of Maine stock. The northern and most eastern portions of the proposed survey area partially overlap with the humpback whale feeding BIA (March through December), which extends throughout the Gulf of Maine, Stellwagen Bank, and Great South Channel (LeBrecque *et al.*, 2015).

Since January 2016, elevated humpback whale mortalities have occurred along the Atlantic coast from Maine to Florida. Partial or full necropsy examinations have been conducted on approximately half of the 158 known cases (as of April 11, 2022). Of the whales examined, about 50 percent had evidence of human interaction, either ship strike or entanglement. While a portion of the whales have shown evidence of pre-mortem vessel strike, this finding is not consistent across all whales examined and more research is needed. NOAA is consulting with researchers that are conducting studies on the humpback whale populations, and these efforts may provide information on changes in whale distribution and habitat use that could provide additional insight into how these vessel interactions occurred. More information is available at:

<https://www.fisheries.noaa.gov/national/marine-life-distress/2016-2022-humpback-whale-unusual-mortality-event-along-atlantic-coast>.

Minke Whale

Since January 2017, elevated minke whale mortalities have occurred along the Atlantic coast from Maine through South Carolina, with a total of 122 strandings (as of April 11, 2022). This event has been declared a UME. Full or partial necropsy examinations were conducted on more than 60 percent of the whales. Preliminary findings in several of the whales have shown evidence of human interactions or infectious disease, but these findings are not consistent across all of the whales examined, so more research is needed. More information is available at:

<https://www.fisheries.noaa.gov/national/marine-life-distress/2017-2022-minke-whale-unusual-mortality-event-along-atlantic-coast>.

The northern and most eastern portions of the proposed survey area partially overlap with one of the minke whale feeding BIAs (March through November), which includes the southern and southwestern section of the Gulf of Maine, including Georges Bank, the Great South Channel, Cape Cod Bay and Massachusetts Bay, Stellwagen Bank, Cape Anne, and Jeffreys Ledge (LeBrecque *et al.*, 2015).

Other Biologically Important Areas for Large Whales

The survey area is flanked by two BIAs for feeding fin whales, the area to the northeast of Cape Cod is considered a BIA year-round, while the area off the tip of Long Island overlapping with the southwest area of the HRG survey area is a BIA from March to October (LaBrecque *et al.* 2015). Both of these BIAs are located within the proposed survey area. For sei whales, a BIA for feeding occurs both to the north and to the east of the HRG survey area from May through November (LaBrecque *et al.* 2015). A portion of the BIA is located within the proposed survey area.

Seals

Since July 2018, elevated numbers of harbor seal and gray seal mortalities have occurred across Maine, New Hampshire and Massachusetts. This event was declared a UME. Additionally, stranded seals have shown clinical signs as far south as Virginia, although not in elevated numbers, therefore the UME investigation now encompasses all seal strandings from Maine to Virginia. Ice seals (harp and hooded seals) have also been stranding with clinical signs, again not in elevated numbers, and those two seal species have also been added to the UME investigation. A total of 3,152 reported strandings (of all species) had occurred from July 1, 2018, through March 13, 2020. Full or partial necropsy examinations have been conducted on some of the seals and samples have been collected for testing. Based on tests conducted thus far, the main pathogen found in the

seals is phocine distemper virus. NMFS is performing additional testing to identify any other factors that may be involved in this UME. Closure of this UME is pending.

Information on this UME is available online at: www.fisheries.noaa.gov/new-england-mid-atlantic/marine-life-distress/2018-2020-pinniped-unusual-mortality-event-along.

Marine Mammal Hearing

Hearing is the most important sensory modality for marine mammals underwater, and exposure to anthropogenic sound can have deleterious effects. To appropriately assess the potential effects of exposure to sound, it is necessary to understand the frequency ranges marine mammals are able to hear. Current data indicate that not all marine mammal species have equal hearing capabilities (*e.g.*, Richardson *et al.*, 1995; Wartzok and Ketten, 1999; Au and Hastings, 2008). To reflect this, Southall *et al.* (2007) recommended that marine mammals be divided into functional hearing groups based on directly measured or estimated hearing ranges on the basis of available behavioral response data, audiograms derived using auditory evoked potential techniques, anatomical modeling, and other data. Note that no direct measurements of hearing ability have been successfully completed for mysticetes (*i.e.*, low-frequency cetaceans). Subsequently, NMFS (2018) described generalized hearing ranges for these marine mammal hearing groups. Generalized hearing ranges were chosen based on the approximately 65 decibel (dB) threshold from the normalized composite audiograms, with the exception for lower limits for low-frequency cetaceans where the lower bound was deemed to be biologically implausible and the lower bound from Southall *et al.* (2007) retained. Marine mammal hearing groups and their associated hearing ranges are provided in Table 3.

Table 3 -- Marine Mammal Hearing Groups (NMFS, 2018)

Hearing Group	Generalized Hearing Range*
Low-frequency (LF) cetaceans (baleen whales)	7 Hz to 35 kHz
Mid-frequency (MF) cetaceans (dolphins, toothed whales, beaked whales, bottlenose whales)	150 Hz to 160 kHz
High-frequency (HF) cetaceans (true porpoises, <i>Kogia</i> , river dolphins, cephalorhynchid, <i>Lagenorhynchus cruciger</i> & <i>L. australis</i>)	275 Hz to 160 kHz
Phocid pinnipeds (PW) (underwater) (true seals)	50 Hz to 86 kHz
Otariid pinnipeds (OW) (underwater) (sea lions and fur seals)	60 Hz to 39 kHz
* Represents the generalized hearing range for the entire group as a composite (<i>i.e.</i> , all species within the group), where individual species' hearing ranges are typically not as broad. Generalized hearing range chosen based on ~65 dB threshold from normalized composite audiogram, with the exception for lower limits for LF cetaceans (Southall <i>et al.</i> 2007) and PW pinniped (approximation).	

The pinniped functional hearing group was modified from Southall *et al.* (2007) on the basis of data indicating that phocid species have consistently demonstrated an extended frequency range of hearing compared to otariids, especially in the higher frequency range (Hemilä *et al.*, 2006; Kastelein *et al.*, 2009).

For more detail concerning these groups and associated frequency ranges, please see NMFS (2018) for a review of available information. Sixteen marine mammal species (14 cetacean and 2 pinniped (both phocid) species) have the reasonable potential to co-occur with the proposed survey activities. Please refer to Table 2. Of the cetacean species that may be present, six are classified as low-frequency cetaceans (*i.e.*, all mysticete species), seven are classified as mid-frequency cetaceans (*i.e.*, all delphinid species and the sperm whale), and one is classified as a high-frequency cetacean (*i.e.*, harbor porpoise).

Potential Effects of Specified Activities on Marine Mammals and their Habitat

This section includes a summary and discussion of the ways that PCW's specified activity may impact marine mammals and their habitat. Detailed descriptions of the potential effects of similar specified activities have been provided in other recent **Federal Register** notices, including for survey activities using the same methodology, over a

similar amount of time, in Atlantic waters. (*e.g.*, 82 FR 20563, May 3, 2017; 85 FR 36537, June 17, 2020; 85 FR 37848, June 24, 2020; 85 FR 48179, August 10, 2020, 86 FR 11239, February 24, 2021; 86 FR 28061, May 25, 2021). No significant new information is available, and we refer the reader to these documents rather than repeating the details here. The **Estimated Take** section includes a quantitative analysis of the number of individuals that are expected to be taken by PCW's activity. The **Negligible Impact Analysis and Determination** section considers the potential effects of the specified activity, the **Estimated Take** section, and the **Proposed Mitigation** section, to draw conclusions regarding the likely impacts of these activities on the reproductive success or survivorship of individuals and how those impacts on individuals are likely to impact marine mammal species or stocks.

Background on Active Acoustic Sound Sources and Acoustic Terminology

This subsection contains a brief technical background on sound, on the characteristics of certain sound types, and on metrics used in this proposal inasmuch as the information is relevant to the specified activity and to the summary of the potential effects of the specified activity on marine mammals. For general information on sound and its interaction with the marine environment, please see, *e.g.*, Au and Hastings (2008); Richardson *et al.* (1995); Urick (1983).

Sound travels in waves, the basic components of which are frequency, wavelength, velocity, and amplitude. Frequency is the number of pressure waves that pass by a reference point per unit of time and is measured in hertz or cycles per second. Wavelength is the distance between two peaks or corresponding points of a sound wave (length of one cycle). Higher frequency sounds have shorter wavelengths than lower frequency sounds, and typically attenuate (decrease) more rapidly, except in certain cases in shallower water. Amplitude is the height of the sound pressure wave or the "loudness" of a sound and is typically described using the relative unit of the decibel. A sound

pressure level (SPL) in dB is described as the ratio between a measured pressure and a reference pressure (for underwater sound, this is 1 microPascal (μPa)), and is a logarithmic unit that accounts for large variations in amplitude. Therefore, a relatively small change in dB corresponds to large changes in sound pressure. The source level (SL) represents the SPL referenced at a distance of 1 m from the source (referenced to 1 μPa), while the received level is the SPL at the listener's position (referenced to 1 μPa).

Root mean square (rms) is the quadratic mean sound pressure over the duration of an impulse. Root mean square is calculated by squaring all of the sound amplitudes, averaging the squares, and then taking the square root of the average (Urlick, 1983). Root mean square accounts for both positive and negative values; squaring the pressures makes all values positive so that they may be accounted for in the summation of pressure levels (Hastings and Popper, 2005). This measurement is often used in the context of discussing behavioral effects, in part because behavioral effects, which often result from auditory cues, may be better expressed through averaged units than by peak pressures.

Sound exposure level (SEL; represented as dB re 1 $\mu\text{Pa}^2\text{-s}$) represents the total energy in a stated frequency band over a stated time interval or event and considers both intensity and duration of exposure. The per-pulse SEL is calculated over the time window containing the entire pulse (*i.e.*, 100 percent of the acoustic energy). SEL is a cumulative metric; it can be accumulated over a single pulse, or calculated over periods containing multiple pulses. Cumulative SEL represents the total energy accumulated by a receiver over a defined time window or during an event. Peak sound pressure (also referred to as zero-to-peak sound pressure or 0-pk) is the maximum instantaneous sound pressure measurable in the water at a specified distance from the source and is represented in the same units as the rms sound pressure.

When underwater objects vibrate or activity occurs, sound-pressure waves are created. These waves alternately compress and decompress the water as the sound wave

travels. Underwater sound waves radiate in a manner similar to ripples on the surface of a pond and may be either directed in a beam or beams or may radiate in all directions (omnidirectional sources). The compressions and decompressions associated with sound waves are detected as changes in pressure by aquatic life and man-made sound receptors such as hydrophones.

Even in the absence of sound from the specified activity, the underwater environment is typically loud due to ambient sound, which is defined as environmental background sound levels lacking a single source or point (Richardson *et al.*, 1995). The sound level of a region is defined by the total acoustical energy being generated by known and unknown sources. These sources may include physical (*e.g.*, wind and waves, earthquakes, ice, atmospheric sound), biological (*e.g.*, sounds produced by marine mammals, fish, and invertebrates), and anthropogenic (*e.g.*, vessels, dredging, construction) sound. A number of sources contribute to ambient sound, including wind and waves, which are a main source of naturally occurring ambient sound for frequencies between 200 Hz and 50 kHz (Mitson, 1995). In general, ambient sound levels tend to increase with increasing wind speed and wave height. Precipitation can become an important component of total sound at frequencies above 500 Hz, and possibly down to 100 Hz during quiet times. Marine mammals can contribute significantly to ambient sound levels, as can some fish and snapping shrimp. The frequency band for biological contributions is from approximately 12 Hz to over 100 kHz. Sources of ambient sound related to human activity include transportation (surface vessels), dredging and construction, oil and gas drilling and production, geophysical surveys, sonar, and explosions. Vessel noise typically dominates the total ambient sound for frequencies between 20 and 300 Hz. In general, the frequencies of anthropogenic sounds are below 1 kHz and, if higher frequency sound levels are created, they attenuate rapidly.

The sum of the various natural and anthropogenic sound sources that comprise ambient sound at any given location and time depends not only on the source levels (as determined by current weather conditions and levels of biological and human activity) but also on the ability of sound to propagate through the environment. In turn, sound propagation is dependent on the spatially and temporally varying properties of the water column and sea floor, and is frequency-dependent. As a result of the dependence on a large number of varying factors, ambient sound levels can be expected to vary widely over both coarse and fine spatial and temporal scales. Sound levels at a given frequency and location can vary by 10-20 dB from day to day (Richardson *et al.*, 1995). The result is that, depending on the source type and its intensity, sound from the specified activity may be a negligible addition to the local environment or could form a distinctive signal that may affect marine mammals. Details of source types are described in the following text.

Sounds are often considered to fall into one of two general types: pulsed and non-pulsed (defined in the following). The distinction between these two sound types is important because they have differing potential to cause physical effects, particularly with regard to hearing (*e.g.*, Ward, 1997 in Southall *et al.*, 2007). Please see Southall *et al.* (2007) for an in-depth discussion of these concepts. The distinction between these two sound types is not always obvious, as certain signals share properties of both pulsed and non-pulsed sounds. A signal near a source could be categorized as a pulse, but due to propagation effects as it moves farther from the source, the signal duration becomes longer (*e.g.*, Greene and Richardson, 1988).

Pulsed sound sources (*e.g.*, airguns, explosions, gunshots, sonic booms, impact pile driving) produce signals that are brief (typically considered to be less than one second), broadband, atonal transients (ANSI, 1986, 2005; Harris, 1998; NIOSH, 1998; ISO, 2003) and occur either as isolated events or repeated in some succession. Pulsed

sounds are all characterized by a relatively rapid rise from ambient pressure to a maximal pressure value followed by a rapid decay period that may include a period of diminishing, oscillating maximal and minimal pressures, and generally have an increased capacity to induce physical injury as compared with sounds that lack these features.

Non-pulsed sounds can be tonal, narrowband, or broadband, brief or prolonged, and may be either continuous or intermittent (ANSI, 1995; NIOSH, 1998). Some of these non-pulsed sounds can be transient signals of short duration but without the essential properties of pulses (*e.g.*, rapid rise time). Examples of non-pulsed sounds include those produced by vessels, aircraft, machinery operations such as drilling or dredging, vibratory pile driving, and active sonar systems. The duration of such sounds, as received at a distance, can be greatly extended in a highly reverberant environment.

Sparkers and boomers produce pulsed signals with energy in the frequency ranges specified in Table 1. The amplitude of the acoustic wave emitted from sparker sources is equal in all directions (*i.e.*, omnidirectional), while other sources planned for use during the proposed surveys have some degree of directionality to the beam, as specified in Table 1. Other sources planned for use during the proposed survey activity (*e.g.*, CHIRP SBPs) should be considered non-pulsed, intermittent sources.

Summary on Specific Potential Effects of Acoustic Sound Sources

Underwater sound from active acoustic sources can include one or more of the following: temporary or permanent hearing impairment, non-auditory physical or physiological effects, behavioral disturbance, stress, and masking. The degree of effect is intrinsically related to the signal characteristics, received level, distance from the source, and duration of the sound exposure. Marine mammals exposed to high-intensity sound, or to lower-intensity sound for prolonged periods, can experience hearing threshold shift (TS), which is the loss of hearing sensitivity at certain frequency ranges (Finneran, 2015). TS can be permanent (PTS), in which case the loss of hearing sensitivity is not fully

recoverable, or temporary (TTS), in which case the animal's hearing threshold would recover over time (Southall *et al.*, 2007).

Animals in the vicinity of PCW's proposed HRG survey activity are unlikely to incur even TTS due to the characteristics of the sound sources, which include relatively low source levels (178 to 205 dB re 1 μ Pa-m) and generally very short pulses and potential duration of exposure. These characteristics mean that instantaneous exposure is unlikely to cause TTS, as it is unlikely that exposure would occur close enough to the vessel for received levels to exceed peak pressure TTS criteria, and that the cumulative duration of exposure would be insufficient to exceed cumulative sound exposure level (SEL) criteria. Even for high-frequency cetacean species (*e.g.*, harbor porpoises), which have the greatest sensitivity to potential TTS, individuals would have to make a very close approach and also remain very close to vessels operating these sources in order to receive multiple exposures at relatively high levels, as would be necessary to cause TTS. Intermittent exposures—as would occur due to the brief, transient signals produced by these sources—require a higher cumulative SEL to induce TTS than would continuous exposures of the same duration (*i.e.*, intermittent exposure results in lower levels of TTS). Moreover, most marine mammals would more likely avoid a loud sound source rather than swim in such close proximity as to result in TTS. Kremser *et al.* (2005) noted that the probability of a cetacean swimming through the area of exposure when a sub-bottom profiler emits a pulse is small—because if the animal was in the area, it would have to pass the transducer at close range in order to be subjected to sound levels that could cause TTS and would likely exhibit avoidance behavior to the area near the transducer rather than swim through at such a close range. Further, the restricted beam shape of many of HRG survey devices planned for use (Table 1) makes it unlikely that an animal would be exposed more than briefly during the passage of the vessel.

Behavioral disturbance may include a variety of effects, including subtle changes in behavior (*e.g.*, minor or brief avoidance of an area or changes in vocalizations), more conspicuous changes in similar behavioral activities, and more sustained and/or potentially severe reactions, such as displacement from or abandonment of high-quality habitat. Behavioral responses to sound are highly variable and context-specific and any reactions depend on numerous intrinsic and extrinsic factors (*e.g.*, species, state of maturity, experience, current activity, reproductive state, auditory sensitivity, time of day), as well as the interplay between factors. Available studies show wide variation in response to underwater sound; therefore, it is difficult to predict specifically how any given sound in a particular instance might affect marine mammals perceiving the signal.

In addition, sound can disrupt behavior through masking, or interfering with, an animal's ability to detect, recognize, or discriminate between acoustic signals of interest (*e.g.*, those used for intraspecific communication and social interactions, prey detection, predator avoidance, navigation). Masking occurs when the receipt of a sound is interfered with by another coincident sound at similar frequencies and at similar or higher intensity, and may occur whether the sound is natural (*e.g.*, snapping shrimp, wind, waves, precipitation) or anthropogenic (*e.g.*, shipping, sonar, seismic exploration) in origin. Marine mammal communications would not likely be masked appreciably by the acoustic signals given the directionality of the signals for most HRG survey equipment types proposed for use (Table 1) and the brief period when an individual mammal is likely to be exposed.

Sound may affect marine mammals through impacts on the abundance, behavior, or distribution of prey species (*e.g.*, crustaceans, cephalopods, fish, zooplankton) (*i.e.*, effects to marine mammal habitat). Prey species exposed to sound might move away from the sound source, experience TTS, experience masking of biologically relevant sounds, or show no obvious direct effects. The most likely impacts (if any) for most prey

species in a given area would be temporary avoidance of the area. Surveys using active acoustic sound sources move through an area relatively quickly, limiting exposure to multiple pulses. In all cases, sound levels would return to ambient once a survey ends and the noise source is shut down and, when exposure to sound ends, behavioral and/or physiological responses are expected to end relatively quickly. Finally, the HRG survey equipment will not have significant impacts to the seafloor and does not represent a source of pollution.

Vessel Strike

Vessel collisions with marine mammals, or ship strikes, can result in death or serious injury of the animal. These interactions are typically associated with large whales, which are less maneuverable than are smaller cetaceans or pinnipeds in relation to large vessels. Ship strikes generally involve commercial shipping vessels, which are generally larger and of which there is much more traffic in the ocean than geophysical survey vessels. Jensen and Silber (2004) summarized ship strikes of large whales worldwide from 1975-2003 and found that most collisions occurred in the open ocean and involved large vessels (*e.g.*, commercial shipping). For vessels used in geophysical survey activities, vessel speed while towing gear is typically only 4 knots (4.6 mph). At these speeds, both the possibility of striking a marine mammal and the possibility of a strike resulting in serious injury or mortality are so low as to be discountable. At average transit speed for geophysical survey vessels, the probability of serious injury or mortality resulting from a strike is less than 50 percent. However, the likelihood of a strike actually happening is again low given the smaller size of these vessels and generally slower speeds. Notably in the Jensen and Silber study, no strike incidents were reported for geophysical survey vessels during that time period.

The potential effects of PCW's specified survey activity are expected to be limited to Level B behavioral harassment. No permanent or temporary auditory effects, or significant impacts to marine mammal habitat, including prey, are expected.

Estimated Take

This section provides an estimate of the number of incidental takes proposed for authorization through this IHA, which will inform both NMFS' consideration of "small numbers" and the negligible impact determination.

Harassment is the only type of take expected to result from these activities. Except with respect to certain activities not pertinent here, section 3(18) of the MMPA defines "harassment" as any act of pursuit, torment, or annoyance, which (i) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment).

Authorized takes would be by Level B harassment only, in the form of disruption of behavioral patterns for individual marine mammals resulting from exposure to noise from certain HRG acoustic sources. Based primarily on the characteristics of the signals produced by the acoustic sources planned for use, Level A harassment is neither anticipated (even absent mitigation), nor proposed to be authorized. Consideration of the anticipated effectiveness of the mitigation measures (*i.e.*, pre-start clearance and shutdown measures), discussed in detail below in the **Proposed Mitigation** section, further strengthens the conclusion that Level A harassment is not a reasonably anticipated outcome of the survey activity. As described previously, no serious injury or mortality is anticipated or proposed to be authorized for this activity. Below we describe how the take is estimated.

Generally speaking, we estimate take by considering: (1) acoustic thresholds above which NMFS believes the best available science indicates marine mammals will be behaviorally harassed or incur some degree of permanent hearing impairment; (2) the area or volume of water that will be ensonified above these levels in a day; (3) the density or occurrence of marine mammals within these ensonified areas; and, (4) and the number of days of activities. We note that while these basic factors can contribute to a basic calculation to provide an initial prediction of takes, additional information that can qualitatively inform take estimates is also sometimes available (*e.g.*, previous monitoring results or average group size). Below, we describe the factors considered here in more detail and present the proposed take estimates.

Acoustic Thresholds

NMFS uses acoustic thresholds that identify the received level of underwater sound above which exposed marine mammals would be reasonably expected to be behaviorally harassed (equated to Level B harassment) or to incur PTS of some degree (equated to Level A harassment).

Level B Harassment – Though significantly driven by received level, the onset of behavioral disturbance from anthropogenic noise exposure is also informed to varying degrees by other factors related to the source (*e.g.*, frequency, predictability, duty cycle), the environment (*e.g.*, bathymetry), and the receiving animals (hearing, motivation, experience, demography, behavioral context) and can be difficult to predict (Southall *et al.*, 2007; Ellison *et al.*, 2012). Based on what the available science indicates and the practical need to use a threshold based on a factor that is both predictable and measurable for most activities, NMFS uses a generalized acoustic threshold based on received level to estimate the onset of behavioral harassment. NMFS predicts that marine mammals may be behaviorally harassed (*i.e.*, Level B harassment) when exposed to underwater anthropogenic noise above received levels of 160 dB re 1 μ Pa (rms) for the impulsive

sources (*i.e.*, boomers, sparkers) and non-impulsive, intermittent sources (*e.g.*, CHIRP SBPs) evaluated here for PCW's proposed activity.

Level A Harassment – NMFS' Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 2.0) (Technical Guidance, 2018) identifies dual criteria to assess auditory injury (Level A harassment) to five different marine mammal groups (based on hearing sensitivity) as a result of exposure to noise from two different types of sources (impulsive or non-impulsive). For more information, see NMFS' 2018 Technical Guidance, which may be accessed at www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance.

PCW's proposed activity includes the use of impulsive (*i.e.*, sparkers and boomers) and non-impulsive (*e.g.*, CHIRP SBP) sources. However, as discussed above, NMFS has concluded that Level A harassment is not a reasonably likely outcome for marine mammals exposed to noise through use of the sources proposed for use here, and the potential for Level A harassment is not evaluated further in this document. Please see PCW's application for details of a quantitative exposure analysis exercise, *i.e.*, calculated Level A harassment isopleths and estimated Level A harassment exposures. Maximum estimated Level A harassment isopleths were less than 4 m for all sources and hearing groups with the exception of an estimated 53 m zone calculated for high-frequency cetaceans during use of the Boomer, respectively. PCW did not request authorization of take by Level A harassment, and no take by Level A harassment is proposed for authorization by NMFS.

Ensonified Area

NMFS has developed a user-friendly methodology for estimating the extent of the Level B harassment isopleths associated with relevant HRG survey equipment (NMFS, 2020). This methodology incorporates frequency and directionality to refine estimated

ensonified zones. For acoustic sources that operate with different beamwidths, the maximum beamwidth was used, and the lowest frequency of the source was used when calculating the frequency-dependent absorption coefficient (Table 1).

NMFS considers the data provided by Crocker and Fratantonio (2016) to represent the best available information on source levels associated with HRG equipment and, therefore, recommends that source levels provided by Crocker and Fratantonio (2016) be incorporated in the method described above to estimate isopleth distances to harassment thresholds. In cases when the source level for a specific type of HRG equipment is not provided in Crocker and Fratantonio (2016), NMFS recommends that either the source levels provided by the manufacturer be used, or, in instances where source levels provided by the manufacturer are unavailable or unreliable, a proxy from Crocker and Fratantonio (2016) be used instead. Table 1 shows the HRG equipment types that may be used during the proposed surveys and the source parameters associated with those HRG equipment types.

Results of modeling using the methodology described above indicated that, of the HRG survey equipment planned for use by PCW that has the potential to result in Level B harassment of marine mammals, the Applied Acoustics AA251 Boomer would produce the largest Level B harassment isopleth (178 m). Estimated Level B harassment isopleths for all sources evaluated here are provided in Table 4. Although PCW does not expect to use the AA251 Boomer source on all planned survey days, it proposes to assume, for purposes of analysis, that the boomer sources would be used on all survey days and across all hours within a given survey day. This is a conservative approach, as the actual sources used on individual survey days, or during a portion of a survey day, may produce smaller distances to the Level B harassment isopleth.

Table 4 -- Distances to Level B Harassment Threshold (160 dB rms)

Equipment	System	Frequency (kHz)	Beam width (°)	Source level (dB re 1 μ Pa m)	Level B harassment horizontal impact distance (m)
Shallow subbottom profiler	EdgeTech Chirp 216	2–16	65	178	4
Deep seismic profiler	Applied Acoustics AA251 Boomer	0.2–15	180	205	178
	GeoMarine Geo Spark 2000 (400 tip)	0.05–3	180	203	141

Marine Mammal Occurrence

In this section, NMFS provides information about the presence, density, or group dynamics of marine mammals that informs the take calculations.

Habitat-based density models produced by the Duke University Marine Geospatial Ecology Laboratory (Roberts *et al.*, 2016, 2017, 2018, 2021) represent the best available information regarding marine mammal densities in the survey area. The density data presented by Roberts *et al.* (2016, 2017, 2018, 2021) incorporates aerial and shipboard line-transect survey data from NMFS and other organizations and incorporates data from 8 physiographic and 16 dynamic oceanographic and biological covariates, and controls for the influence of sea state, group size, availability bias, and perception bias on the probability of making a sighting. These density models were originally developed for all cetacean taxa in the U.S. Atlantic (Roberts *et al.*, 2016). In subsequent years, certain models have been updated based on additional data as well as certain methodological improvements. More information is available online at seamap.env.duke.edu/models/Duke-EC/.

Marine mammal density estimates in the survey area (animals/km²) were obtained using the most recent model results for all taxa (Roberts *et al.*, 2016, 2017, 2018, 2021). The updated models incorporate additional sighting data, including sightings from NOAA’s Atlantic Marine Assessment Program for Protected Species (AMAPPS)

surveys. Those data provide abundance estimates for species or species guilds within 10 km x 10 km grid cells (100 km²), or in the case of NARW densities within 5 km x 5 km grid cells, on a monthly or annual basis, depending on the species. Using geographic information system (GIS) (ESRI 2017), the proposed survey area and the NARW SMA polygons were used to select grid cells from the Roberts *et al.* (2016; 2017; 2018; 2021) data that contain the most recent monthly or annual estimates for each species for the months of May through December. For the months of January through April, only the proposed survey area polygon was used to select density grid cells since it excludes waters within Cape Cod Bay where no surveys will occur from January 1 through May 15. The average monthly abundance for each species was calculated as the mean value of all grid cells within the survey area and then converted to density (individuals/km²) by dividing by 100 km². Finally, an average annual density was calculated by taking the mean across all 12 months for each species (see Table 8 of the application).

The estimated monthly density of seals provided in Roberts *et al.* (2018) includes all seal species present in the region as a single guild. To split the resulting “seal” density-based exposure estimate by species, the estimate was multiplied by the proportion of the combined abundance attributable to each species. Specifically, the SAR abundance estimates (Hayes *et al.* 2021) were summed for the two species (gray seal = 27,300, harbor seal = 61,336; total = 88,636) and the total divided by the estimate for each species to get the proportion of the total for each species (gray seal = 0.308; harbor seal = 0.692). The total estimated exposure from the “seal” density provide by Roberts *et al.* (2018) was then multiplied by these proportions to get the species specific exposure estimates.

Densities from each of the selected density blocks were averaged for each month available to provide monthly density estimates for each species (when available based on the temporal resolution of the model products), along with the average annual density.

Please see Tables 8 and 9 of PCW's application for density values used in the exposure estimation process. Additional data regarding average group sizes from survey effort in the region was considered to ensure adequate take estimates are evaluated (see Table 10 of the application).

Take Calculation and Estimation

Here NMFS describes how the information provided above is brought together to produce a quantitative take estimate. In order to estimate the number of marine mammals predicted to be exposed to sound levels that would result in harassment, radial distances to predicted isopleths corresponding to Level B harassment thresholds are calculated, as described above. The maximum distance (*i.e.*, 178 m distance associated with the boomer) to the Level B harassment criterion and the estimated trackline distance traveled per day by a given survey vessel (*i.e.*, 80 km) was used to calculate the daily ensonified area, or zone of influence (ZOI) around the survey vessel. This distance was multiplied by two times the average daily survey distance (80 km) and the area of a circle with radius 178 m was added to the result to calculate the daily ZOI (28.6 km²). The daily ZOI was then multiplied by the total number of expected survey days (636) to estimate the total ZOI for the proposed surveys (18,177 km²).

Potential Level B harassment exposures are estimated by multiplying the average annual density of each species within either the Lease Area or potential ECR area by the total ZOI for the planned surveys. Those results are shown in Table 5.

The larger of the two estimates from the approaches described above: density-based exposure estimates or mean group size was then selected as the requested take as shown in Table 5. In cases where the calculations resulted in a non-integer, the result was rounded up to the nearest whole number since it is not logical to request a partial take. Additionally, based on observational data collected during prior HRG surveys in this area, the density of common dolphins predicted by the Roberts *et al.* (2018) model does

not appear to adequately reflect the number of dolphins that may be encountered during the planned surveys. Data collected by Protected Species Observers (PSOs) on survey vessels operating in 2020–2021 showed an average of approximately 16 common dolphins may be observed within 200 m of a vessel (the approximate Level B harassment distance) per survey day. Multiplying the anticipated 636 survey days by 16 common dolphins per day results in a potential estimated take of 10,176 common dolphins so this has been used as the requested take of common dolphins shown in Table 5.

For the “seal” guild in the Roberts *et al.* (2018) densities, the exposure estimate was split by species using the relative abundance for the two species to produce the species-specific requested take.

For Bottlenose dolphins, the offshore morphotype inhabits the outer continental slope and shelf edge regions from Georges Bank to the Florida Keys, while the coastal morphotype is continuously distributed along the Atlantic Coast from south of New York to the Florida Peninsula (Hayes *et al.* 2020)). Offshore common bottlenose dolphin sightings occur from Cape Hatteras to the eastern end of Georges Bank (Kenney 1990). The western North Atlantic offshore stock is distributed primarily along the OCS and continental slope, from Georges Bank to Cape Hatteras during spring and summer (CeTAP 1982). Bottlenose dolphins encountered in the survey area would likely belong to the Western North Atlantic Offshore stock, so all takes are being requested from this stock. However, it is possible that a few animals encountered during the surveys could be from the North Atlantic Northern Migratory Coastal stock, but chance of occurrence is low, and no take from this species is proposed. Similarly, based on the distributions described in Hayes *et al.* (2020, 2021b), pilot whale sightings in the Lease Area would most likely be long-finned pilot whales, so all pilot whale takes being requested are for long-finned pilot whales.

For NARWs, the implementation of a 500 m acoustic shutdown zone and the 500 m vessel separation distance identified in the vessel strike avoidance measures means that the likelihood of an exposure to received sound levels greater than 160 dB SPLrms is very low. As a precautionary measure, takes by Level B harassment are requested for the proposed survey.

Table 5 -- Proposed takes by Level B harassment and percentages of each species or stock abundance

Taxonomic group	Common name	Stock (NEST) ^a	Density Based Exposures	Mean Group Size	Proposed Take by Level B harassment	Percent of Stock
Cetacean (Mysticete)	North Atlantic right whale	Western Atlantic Stock (368)	29	2.4	30	8.2
	Blue whale	Western North Atlantic Stock (402)	0	1.0	1	Less than 1 percent
	Fin whale	Western North Atlantic Stock (6,802)	59	1.8	60	Less than 1 percent
	Sei whale	Nova Scotia Stock (6,292)	5	1.6	5	Less than 1 percent
	Minke whale	Canadian East Coastal Stock (21,968)	37	1.2	37	Less than 1 percent
	Humpback whale	West Indies DPS (1,396)	45	2.0	46	3.3
Cetacean (Odontocete)	Sperm whale	North Atlantic Stock (4,349)	2	1.5	5	Less than 1 percent
	Atlantic white-sided dolphin	Western North Atlantic Stock (93,233)	1,014	27.9	1,014	Less than 2 percent
	Atlantic spotted dolphin	Western North Atlantic Stock (39,921)	4	29.0	29	Less than 1 percent

	Common bottlenose dolphin	Western North Atlantic Offshore Stock (62,851)	398	7.8	399	Less than 1 percent
	Long-finned pilot whale	Western North Atlantic Stock (68,139)	86	8.4	86	Less than 1 percent
	Risso's dolphin	Western North Atlantic Stock (35,215)	4	5.4	30	Less than 1 percent
	Common dolphin (short-beaked)	Western North Atlantic Stock (172,974)	1,081	34.9	10,176	5.9
	Harbor porpoise	Western North Atlantic Stock (95,543)	759	2.7	759	Less than 1 percent
Pinniped (Phocid)	Gray seal	Western North Atlantic Stock (27,300)	399	0.4	400	Less than 2 percent
	Harbor seal	Western North Atlantic Stock (61,336)	897	1.0	897	Less than 2 percent

^a Source – (Hayes *et al.* 2021)

Rare Species

Species considered to be rare or not expected to occur in the area were not included in the previous exposure estimates because the densities would be too low to provide meaningful density-based exposures. Nonetheless, species considered to be rare are occasionally encountered. For example, white-beaked dolphins were recorded in both 2019 and 2020 during HRG surveys in this area (Vineyard-Wind 2019, 2020) with the sighting of White-beaked dolphins in 2019 consisting of 30 animals. Other rare species encountered in the survey area during previous HRG surveys include false killer whale in 2019 (five individuals) and 2021 (one individual) (Vineyard-Wind 2019, 2021) and orca (killer whale) in 2022 (two individuals; data not yet submitted). When species not listed

in an IHA are encountered and may be taken, it is necessary to cease survey operations to avoid unauthorized take. To avoid this potential disruption to survey operations, PCW is requesting and NMFS is proposing take by Level B harassment for these three rare species based on the largest number of individuals observed within one year: 30 white-beaked dolphins, 5 false killer whales, and 2 killer whales.

The take numbers shown in Table 5 are those requested by PCW. NMFS concurs with the requested take numbers and proposes to authorize them. Previous monitoring data compiled by PCW (available online at: www.fisheries.noaa.gov/action/incidental-take-authorization-ocean-wind-marine-site-characterization-surveys-offshore-new) suggests that the proposed take numbers for authorization are sufficient.

Proposed Mitigation

In order to issue an IHA under section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to the activity, and other means of effecting the least practicable impact on the species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stock for taking for certain subsistence uses (latter not applicable for this action). NMFS regulations require applicants for incidental take authorizations to include information about the availability and feasibility (economic and technological) of equipment, methods, and manner of conducting the activity or other means of effecting the least practicable adverse impact upon the affected species or stocks and their habitat (50 CFR 216.104(a)(11)).

In evaluating how mitigation may or may not be appropriate to ensure the least practicable adverse impact on species or stocks and their habitat, as well as subsistence uses where applicable, we carefully consider two primary factors:

(1) The manner in which, and the degree to which, the successful implementation of the measure(s) is expected to reduce impacts to marine mammals, marine mammal

species or stocks, and their habitat. This considers the nature of the potential adverse impact being mitigated (likelihood, scope, range). It further considers the likelihood that the measure will be effective if implemented (probability of accomplishing the mitigating result if implemented as planned), the likelihood of effective implementation (probability implemented as planned); and

(2) The practicability of the measures for applicant implementation, which may consider such things as cost and impact on operations.

Mitigation for Marine Mammals and their Habitat

NMFS proposes the following mitigation measures be implemented during PCW's proposed marine site characterization surveys. Pursuant to section 7 of the ESA, PCW would also be required to adhere to relevant Project Design Criteria (PDC) of the NMFS' Greater Atlantic Regional Fisheries Office (GARFO) programmatic consultation (specifically PDCs 4, 5, and 7) regarding geophysical surveys along the U.S. Atlantic coast (<https://www.fisheries.noaa.gov/new-england-mid-atlantic/consultations/section-7-take-reporting-programmatics-greater-atlantic#offshore-wind-site-assessment-and-site-characterization-activities-programmatic-consultation>).

Marine Mammal Shutdown Zones and Level B Harassment Zone

Marine mammal shutdown zones (SZs) would be established around the HRG survey equipment and monitored by PSOs:

- 500-m SZ for North Atlantic right whales
- 100-m SZ for all other marine mammals

If a marine mammal is detected approaching or entering the SZs during the HRG survey, the vessel operator would adhere to the shutdown procedures described below to minimize noise impacts on the animals. These stated requirements will be included in the site-specific training provided to the survey team.

Pre-Start Clearance

Marine mammal clearance zones (CZs) would be established around the HRG survey equipment and monitored by PSOs:

- 500-m CZ for all ESA-listed marine mammals; and
- 100-m CZ for all other marine mammals

Vineyard Northeast would implement a 30-minute pre-start clearance period prior to initiation of ramp-up of specified HRG equipment. During this period, CZs would be monitored by PSOs, using the appropriate visual technology. Ramp-up may not be initiated if any marine mammal(s) is within its respective CZ. If a marine mammal is observed within its CZ during the pre-start clearance period, ramp-up may not begin until the animal(s) has been observed exiting its respective CZ or until an additional time has elapsed with no further sighting (*i.e.*, 15 minutes for small odontocetes and seals, and 30 minutes for all other species).

Ramp-Up of Survey Equipment

When technically feasible, a ramp-up procedure would be used for HRG survey equipment capable of adjustment of energy levels at the start or restart of survey activities. The ramp-up procedure would be used at the beginning of HRG survey activities to provide additional protection to marine mammals in or near the Survey Area by allowing them to vacate the area prior to the commencement of survey equipment operation at full power. A ramp-up would begin with the powering up of the smallest acoustic HRG equipment at its lowest practical power output appropriate for the survey. When technically feasible, the power would then be gradually turned up and other acoustic sources would be added.

Ramp-up activities will be delayed if a marine mammal(s) enters its respective CZ. Ramp-up will continue if the animal has been observed exiting its respective CZ or until an additional period has elapsed with no additional sightings (*i.e.*, 15 minutes for small odontocetes and seals, and 30 minutes for all other species).

Activation of survey equipment through ramp-up procedures may not occur when visual observation of the pre-start clearance/shutdown zone is not expected to be effective using the appropriate visual technology (*i.e.*, during inclement conditions such as heavy rain or fog).

Shutdown Procedures

An immediate shutdown of the specified HRG survey equipment would be required if a marine mammal is sighted entering or within its respective SZ. The vessel operator must comply immediately with any call for shutdown by the PSO. Any disagreement between the PSO and vessel operator should be discussed only after shutdown has occurred. Subsequent restart of the survey equipment can be initiated if the animal has been observed exiting its respective SZ or until an additional time has elapsed (*i.e.*, 15 minutes for harbor porpoise, 30 minutes for all other species).

If a species for which authorization has not been granted, or a species for which authorization has been granted but the authorized number of takes have been met, approaches or is observed within the applicable Level B harassment zone (Table 4), shutdown would occur.

If the acoustic source is shut down for reasons other than mitigation (*e.g.*, mechanical difficulty) for less than 30 minutes, it may be activated again without ramp-up if PSOs have maintained constant observation and no detections of any marine mammal have occurred within the respective SZs. If the acoustic source is shut down for a period longer than 30 minutes, then pre-start clearance and ramp-up procedures will be initiated as described in the previous section.

The shutdown requirement would be waived for pinnipeds and for small delphinids of the following genera: *Delphinus*, *Lagenorhynchus*, *Stenella*, and *Tursiops*. Specifically, if a delphinid from the specified genera or a pinniped is visually detected approaching the vessel (*i.e.*, to bow ride) or towed equipment, shutdown is not required.

Furthermore, if there is uncertainty regarding identification of a marine mammal species (*i.e.*, whether the observed marine mammal(s) belongs to one of the delphinid genera for which shutdown is waived), PSOs must use best professional judgement in making the decision to call for a shutdown. Additionally, shutdown is required if a delphinid or pinniped detected in the shutdown zone and belongs to a genus other than those specified.

Shutdown, pre-start clearance, and ramp-up procedures would not be required during HRG survey operations using only non-impulsive sources (*e.g.*, echosounders), other than non-parametric sub-bottom profilers (*e.g.*, CHIRP SBPs).

Vessel Strike Avoidance

Vineyard Northeast must ensure that vessel operators and crew maintain a vigilant watch for cetaceans and pinnipeds and slow down or stop their vessels to avoid striking these species. Survey vessel crew members responsible for navigation duties will receive site-specific training on marine mammals sighting/reporting and vessel strike avoidance measures. Vessel strike avoidance measures include the following, except under circumstances when complying with these requirements would put the safety of the vessel or crew at risk:

- Vessel operators and crews must maintain a vigilant watch for all protected species and slow down, stop their vessel(s), or alter course, as appropriate and regardless of vessel size, to avoid striking any protected species. A visual observer aboard the vessel must monitor a vessel strike avoidance zone based on the appropriate separation distance around the vessel (distances stated below). Visual observers monitoring the vessel strike avoidance zone may be third-party observers (*i.e.*, PSOs) or crew members, but crew members responsible for these duties must be provided sufficient training to 1) distinguish protected species from other phenomena and 2) broadly to identify a marine mammal as a North Atlantic right whale, other whale

(defined in this context as sperm whales or baleen whales other than North Atlantic right whales), or other marine mammal.

- Members of the monitoring team will consult NMFS North Atlantic right whale reporting system and Whale Alert at the start of every PSO shift, for situational awareness regarding the presence of North Atlantic right whales throughout the Survey Area, and for the establishment of Slow Zones (including visual-detection-triggered dynamic management areas (DMAs) and acoustically-triggered slow zones) within or near the Survey Area.

- All survey vessels, regardless of size, must observe a 10-knot speed restriction in specific areas designated by NMFS for the protection of North Atlantic right whales from vessel strikes, including SMAs and DMAs when in effect;

- All vessels greater than or equal to 19.8 m in overall length operating from November 1 through April 30 will operate at speeds of 10 knots or less at all times;

- All vessels must reduce their speed to 10 knots or less when mother/calf pairs, pods, or large assemblages of cetaceans are observed near a vessel;

- All vessels must maintain a minimum separation distance of 500 m from North Atlantic right whales and other ESA-listed species. If an ESA-listed species is sighted within the relevant separation distance, the vessel must steer a course away at 10 knots or less until the 500-m separation distance has been established. If a whale is observed but cannot be confirmed as a species that is not ESA-listed, the vessel operator must assume that it is an ESA-listed species and take appropriate action.

- All vessels must, to the maximum extent practicable, attempt to maintain a minimum separation distance of 100 m from all non-ESA listed whales,

- All vessels must, to the maximum extent practicable, attempt to maintain a minimum separation distance of 50 m from all other marine mammals, with an

understanding that at times this may not be possible (*e.g.*, for animals that approach the vessel).

- When marine mammals are sighted while a vessel is underway, the vessel must take action as necessary to avoid violating the relevant separation distance (*e.g.*, attempt to remain parallel to the animal's course, avoid excessive speed or abrupt changes in direction until the animal has left the area). If marine mammals are sighted within the relevant separation distance, the vessel must reduce speed and shift the engine to neutral, not engaging the engines until animals are clear of the area. This does not apply to any vessel towing gear or any vessel that is navigationally constrained.

Seasonal Restrictions

Vineyard Northeast proposes to refrain from conducting survey activities using HRG equipment operating at or below 180 kHz from January 1 through May 15 within the North Atlantic right whale SMA in Cape Cod Bay.

Crew Training

Project-specific training will be conducted for all vessel crew prior to the start of a survey and during any changes in crew such that all survey personnel are fully aware and understand the mitigation, monitoring, and reporting requirements. Prior to implementation with vessel crews, the training program will be provided to NMFS for review and approval. Confirmation of the training and understanding of the requirements will be documented on a training course log sheet. Signing the log sheet will certify that the crew member understands and will comply with the necessary requirements throughout the survey activities.

Based on our evaluation of the applicant's proposed measures, as well as other measures considered by NMFS, NMFS has preliminarily determined that the proposed mitigation measures provide the means of effecting the least practicable impact on marine

mammal species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance.

Proposed Monitoring and Reporting

In order to issue an IHA for an activity, section 101(a)(5)(D) of the MMPA states that NMFS must set forth requirements pertaining to the monitoring and reporting of such taking. The MMPA implementing regulations at 50 CFR 216.104 (a)(13) indicate that requests for authorizations must include the suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and of the level of taking or impacts on populations of marine mammals that are expected to be present in the proposed action area. Effective reporting is critical both to compliance as well as ensuring that the most value is obtained from the required monitoring.

Monitoring and reporting requirements prescribed by NMFS should contribute to improved understanding of one or more of the following:

- Occurrence of marine mammal species or stocks in the area in which take is anticipated (*e.g.*, presence, abundance, distribution, density);
- Nature, scope, or context of likely marine mammal exposure to potential stressors/impacts (individual or cumulative, acute or chronic), through better understanding of: (1) action or environment (*e.g.*, source characterization, propagation, ambient noise); (2) affected species (*e.g.*, life history, dive patterns); (3) co-occurrence of marine mammal species with the action; or (4) biological or behavioral context of exposure (*e.g.*, age, calving or feeding areas);
- Individual marine mammal responses (behavioral or physiological) to acoustic stressors (acute, chronic, or cumulative), other stressors, or cumulative impacts from multiple stressors;

- How anticipated responses to stressors impact either: (1) long-term fitness and survival of individual marine mammals; or (2) populations, species, or stocks;
- Effects on marine mammal habitat (*e.g.*, marine mammal prey species, acoustic habitat, or other important physical components of marine mammal habitat); and
- Mitigation and monitoring effectiveness.

Proposed Monitoring Measures

Visual monitoring will be performed by qualified, NMFS-approved PSOs, the resumes of whom will be provided to NMFS for review and approval prior to the start of survey activities. PCW would employ independent, dedicated, trained PSOs, meaning that the PSOs must 1) be employed by a third-party observer provider, 2) have no tasks other than to conduct observational effort, collect data, and communicate with and instruct relevant vessel crew with regard to the presence of marine mammals and mitigation requirements (including brief alerts regarding maritime hazards), and 3) have successfully completed an approved PSO training course appropriate for their designated task. On a case-by-case basis, non-independent observers may be approved by NMFS for limited, specific duties in support of approved, independent PSOs on smaller vessels with limited crew capacity operating in nearshore waters. Section 5 of the draft IHA contains further details regarding PSO approval.

The PSOs will be responsible for monitoring the waters surrounding each survey vessel to the farthest extent permitted by sighting conditions, including shutdown zones, during all HRG survey operations. PSOs will visually monitor and identify marine mammals, including those approaching or entering the established shutdown zones during survey activities. It will be the responsibility of the Lead PSO on duty to communicate the presence of marine mammals as well as to communicate the action(s) that are necessary to ensure mitigation and monitoring requirements are implemented as appropriate.

During all HRG survey operations (*e.g.*, any day on which use of an HRG source is planned to occur), a minimum of one PSO must be on duty during daylight operations on each survey vessel, conducting visual observations at all times on all active survey vessels during daylight hours (*i.e.*, from 30 minutes prior to sunrise through 30 minutes following sunset). Two PSOs will be on watch during nighttime operations and during periods of poor visibility. The PSO(s) would ensure 360° visual coverage around the vessel from the most appropriate observation posts and would conduct visual observations using binoculars and/or night vision goggles, infrared cameras and the naked eye while free from distractions and in a consistent, systematic, and diligent manner. PSOs may be on watch for a maximum of 4 consecutive hours followed by a break of at least 2 hours between watches and may conduct a maximum of 12 hours of observation per 24-hr period. In cases where multiple vessels are surveying concurrently, any observations of marine mammals would be communicated to PSOs on all nearby survey vessels.

PSOs must be equipped with binoculars and have the ability to estimate distance and bearing to detect marine mammals, particularly in proximity to shutdown zones. Reticulated binoculars must also be available to PSOs for use as appropriate based on conditions and visibility to support the sighting and monitoring of marine mammals. During nighttime operations, night-vision goggles with thermal clip-ons and infrared technology would be used. Position data would be recorded using hand-held or vessel GPS units for each sighting.

During good conditions (*e.g.*, daylight hours; Beaufort sea state (BSS) 3 or less), to the maximum extent practicable, PSOs would also conduct observations when the acoustic source is not operating for comparison of sighting rates and behavior with and without use of the active acoustic sources. Any observations of marine mammals by crew members aboard any vessel associated with the survey would be relayed to the PSO team.

Data on all PSO observations would be recorded based on standard PSO collection requirements. This would include dates, times, and locations of survey operations; dates and times of observations, location and weather; details of marine mammal sightings (*e.g.*, species, numbers, behavior); and details of any observed marine mammal behavior that occurs (*e.g.*, noted behavioral disturbances).

Proposed Reporting Measures

Within 90 days after completion of survey activities or expiration of this IHA, whichever comes sooner, a final technical report will be provided to NMFS that fully documents the methods and monitoring protocols, summarizes the data recorded during monitoring, summarizes the number of marine mammals observed during survey activities (by species, when known), summarizes the mitigation actions taken during surveys (including what type of mitigation and the species and number of animals that prompted the mitigation action, when known), and provides an interpretation of the results and effectiveness of all mitigation and monitoring. A final report must be submitted within 30 days following resolution of any comments on the draft report. All draft and final marine mammal and acoustic monitoring reports must be submitted to *PR.ITP.MonitoringReports@noaa.gov*, *nmfs.gar.incidental-take@noaa.gov*, and *ITP.Potlock@noaa.gov*. The report must contain at minimum, the following:

- PSO names and affiliations;
- Dates of departures and returns to port with port name;
- Dates and times (Greenwich Mean Time) of survey effort and times corresponding with PSO effort;
- Vessel location (latitude/longitude) when survey effort begins and ends; vessel location at beginning and end of visual PSO duty shifts;
- Vessel heading and speed at beginning and end of visual PSO duty shifts and upon any line change;

- Environmental conditions while on visual survey (at beginning and end of PSO shift and whenever conditions change significantly), including wind speed and direction, Beaufort sea state, Beaufort wind force, swell height, weather conditions, cloud cover, sun glare, and overall visibility to the horizon;

- Factors that may be contributing to impaired observations during each PSO shift change or as needed as environmental conditions change (*e.g.*, vessel traffic, equipment malfunctions); and

- Survey activity information, such as type of survey equipment in operation, acoustic source power output while in operation, and any other notes of significance (*i.e.*, pre-start clearance survey, ramp-up, shutdown, end of operations, etc.).

If a marine mammal is sighted, the following information should be recorded:

- Watch status (sighting made by PSO on/off effort, opportunistic, crew, alternate vessel/platform);

- PSO who sighted the animal;

- Time of sighting;

- Vessel location at time of sighting;

- Water depth;

- Direction of vessel's travel (compass direction);

- Direction of animal's travel relative to the vessel;

- Pace of the animal;

- Estimated distance to the animal and its heading relative to vessel at initial sighting;

- Identification of the animal (*e.g.*, genus/species, lowest possible taxonomic level, or unidentified); also note the composition of the group if there is a mix of species;

- Estimated number of animals (high/low/best);

- Estimated number of animals by cohort (adults, yearlings, juveniles, calves, group composition, etc.);
- Description (as many distinguishing features as possible of each individual seen, including length, shape, color, pattern, scars or markings, shape and size of dorsal fin, shape of head, and blow characteristics);
- Detailed behavior observations (*e.g.*, number of blows, number of surfaces, breaching, spyhopping, diving, feeding, traveling; as explicit and detailed as possible; note any observed changes in behavior);
- Animal's closest point of approach and/or closest distance from the center point of the acoustic source;
- Platform activity at time of sighting (*e.g.*, deploying, recovering, testing, data acquisition, other); and
- Description of any actions implemented in response to the sighting (*e.g.*, delays, shutdown, ramp-up, speed or course alteration, etc.) and time and location of the action.

If a NARW is observed at any time by PSOs or personnel on any project vessels, during surveys or during vessel transit, PCW must immediately report sighting information to the NMFS NARW Sighting Advisory System: (866) 755-6622. NARW sightings in any location may also be reported to the U.S. Coast Guard via channel 16.

In the event that PCW personnel discover an injured or dead marine mammal, PCW will report the incident to the NMFS Office of Protected Resources (OPR) and the NMFS New England/Mid-Atlantic Stranding Coordinator as soon as feasible. The report would include the following information:

- Time, date, and location (latitude/longitude) of the first discovery (and updated location information if known and applicable);
- Species identification (if known) or description of the animal(s) involved;

- Condition of the animal(s) (including carcass condition if the animal is dead);

- Observed behaviors of the animal(s), if alive;

- If available, photographs or video footage of the animal(s); and

- General circumstances under which the animal was discovered.

In the unanticipated event of a ship strike of a marine mammal by any vessel involved in the activities covered by the IHA, PCW would report the incident to the NMFS OPR and the NMFS New England/Mid-Atlantic Stranding Coordinator as soon as feasible. The report would include the following information:

- Time, date, and location (latitude/longitude) of the incident;

- Species identification (if known) or description of the animal(s) involved;

- Vessel's speed during and leading up to the incident;

- Vessel's course/heading and what operations were being conducted (if applicable);

- Status of all sound sources in use;

- Description of avoidance measures/requirements that were in place at the time of the strike and what additional measures were taken, if any, to avoid strike;

- Environmental conditions (*e.g.*, wind speed and direction, Beaufort sea state, cloud cover, visibility) immediately preceding the strike;

- Estimated size and length of animal that was struck;

- Description of the behavior of the marine mammal immediately preceding and following the strike;

- If available, description of the presence and behavior of any other marine mammals immediately preceding the strike;

- Estimated fate of the animal (*e.g.*, dead, injured but alive, injured and moving, blood or tissue observed in the water, status unknown, disappeared); and

- To the extent practicable, photographs or video footage of the animal(s).

Negligible Impact Analysis and Determination

NMFS has defined negligible impact as an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival (50 CFR 216.103). A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (*i.e.*, population-level effects). An estimate of the number of takes alone is not enough information on which to base an impact determination. In addition to considering estimates of the number of marine mammals that might be “taken” through harassment, NMFS considers other factors, such as the likely nature of any responses (*e.g.*, intensity, duration), the context of any responses (*e.g.*, critical reproductive time or location, migration), as well as effects on habitat, and the likely effectiveness of the mitigation. NMFS also assesses the number, intensity, and context of estimated takes by evaluating this information relative to population status. Consistent with the 1989 preamble for NMFS’s implementing regulations (54 FR 40338; September 29, 1989), the impacts from other past and ongoing anthropogenic activities are incorporated into this analysis via their impacts on the environmental baseline (*e.g.*, as reflected in the regulatory status of the species, population size and growth rate where known, ongoing sources of human-caused mortality, or ambient noise levels).

To avoid repetition, our analysis applies to all the species listed in Table 5 given that NMFS expects the anticipated effects of the proposed survey to be similar in nature. Where there are meaningful differences between species or stocks - as is the case of the NARW - they are included as separate subsections below. NMFS does not anticipate that serious injury or mortality would occur as a result from HRG surveys, even in the absence of mitigation, and no serious injury or mortality is proposed to be authorized. As discussed in the **Potential Effects of Specified Activities on Marine Mammals and**

their Habitat section, non-auditory physical effects and vessel strike are not expected to occur. NMFS expects that all potential takes would be in the form of short-term Level B behavioral harassment in the form of temporary avoidance of the area or decreased foraging (if such activity was occurring), reactions that are considered to be of low severity and with no lasting biological consequences (*e.g.*, Southall *et al.*, 2007). Even repeated Level B harassment of some small subset of an overall stock is unlikely to result in any significant realized decrease in viability for the affected individuals, and thus would not result in any adverse impact to the stock as a whole. As described above, Level A harassment is not expected to occur given the nature of the operations and the estimated size of the Level A harassment zones.

In addition to being temporary, the maximum expected harassment zone around a survey vessel is 178 m. Although this distance is assumed for all survey activity in estimating take numbers proposed for authorization and evaluated here, other survey activity would involve use of acoustic sources with a reduced acoustic harassment zone producing expected effects of particularly low(er) severity. Therefore, the ensonified area surrounding each vessel is relatively small compared to the overall distribution of the animals in the area and their use of the habitat. Feeding behavior is not likely to be significantly impacted as prey species are mobile and are broadly distributed throughout the survey area; therefore, marine mammals that may be temporarily displaced during survey activities are expected to be able to resume foraging once they have moved away from areas with disturbing levels of underwater noise. Because of the temporary nature of the disturbance and the availability of similar habitat and resources in the surrounding area, the impacts to marine mammals and the food sources that they utilize are not expected to cause significant or long-term consequences for individual marine mammals or their populations.

There are no rookeries, mating or calving grounds known to be biologically important to marine mammals within the proposed survey area. However, there are BIAs for large whales, which overlap with the survey area. As discussed earlier in this document, there are two BIAs for feeding fin whales that flank the survey area, a BIA for feeding humpback whales northeast of the survey area, and a portion of the minke and sei whale feeding BIAs within the survey area. Migration and feeding BIAs for NARW are present in the survey area, but are discussed in the NARW subsection below.

Due to the fact that the proposed survey activities are temporary and the spatial extent of sound produced by the survey would be very small relative to the spatial extent of the available feeding habitat in the BIAs for large whales (as previously discussed), feeding for large whales is not expected to be impacted by the proposed survey. Given the relatively small size of the ensonified area, it is unlikely that prey availability would be adversely affected by HRG survey operations.

NARWs

The status of the NARW population is of heightened concern and, therefore, merits additional analysis. As noted previously, elevated NARW mortalities began in June 2017 and there is an active UME. Overall, preliminary findings support human interactions, specifically vessel strikes and entanglements, as the cause of death for the majority of NARWs. As noted previously, the proposed survey area overlaps migratory and feeding BIAs and critical habitat for NARW. Because the proposed survey activities are temporary and the spatial extent of sound produced by the survey would be very small relative to the spatial extent of the available migratory and feeding habitats in the BIAs and critical habitat, NARW migration is not expected to be impacted by the proposed survey. Given the relatively small size of the ensonified area, it is unlikely that prey availability for NARW would be adversely affected by HRG survey operations. Required vessel strike avoidance measures will also decrease risk of ship strike during

migration; no ship strike is expected to occur during PCW's proposed activities.

Additionally, only very limited take by Level B harassment of NARW has been requested and is being proposed for authorization by NMFS as HRG survey operations are required to maintain a 500 m EZ and shutdown if a NARW is sighted at or within the EZ. The 500 m shutdown zone for NARWs is conservative, considering the Level B harassment isopleth for the most impactful acoustic source (*i.e.*, boomer) is estimated to be 178 m, and thereby minimizes the potential for behavioral harassment of this species. As noted previously, Level A harassment is not expected due to the small PTS zones associated with HRG equipment types proposed for use. NMFS does not anticipate NARWs takes that would result from PCW's proposed activities would impact annual rates of recruitment or survival. Thus, any takes that occur would not result in population level impacts.

Other Marine Mammal Species with Active UMEs

As noted previously, there are several active UMEs occurring in the vicinity of PCW's proposed survey area. Elevated humpback whale mortalities have occurred along the Atlantic coast from Maine through Florida since January 2016. Of the cases examined, approximately half had evidence of human interaction (ship strike or entanglement). The UME does not yet provide cause for concern regarding population-level impacts. Despite the UME, the relevant population of humpback whales (the West Indies breeding population, or DPS) remains stable at approximately 12,000 individuals.

Beginning in January 2017, elevated minke whale strandings have occurred along the Atlantic coast from Maine through South Carolina, with highest numbers in Massachusetts, Maine, and New York. This event does not provide cause for concern regarding population level impacts, as the likely population abundance is greater than 20,000 whales.

The required mitigation measures are expected to reduce the number and/or severity of proposed takes for all species listed in Table 5, including those with active UMEs, to the level of least practicable adverse impact. In particular, they would provide animals the opportunity to move away from the sound source throughout the survey area before HRG survey equipment reaches full energy, thus preventing them from being exposed to sound levels that have the potential to cause injury (Level A harassment) or more severe Level B harassment. No Level A harassment is anticipated, even in the absence of mitigation measures, or proposed for authorization.

NMFS expects that takes would be in the form of short-term Level B behavioral harassment by way of brief startling reactions and/or temporary vacating of the area, or decreased foraging (if such activity was occurring)—reactions that (at the scale and intensity anticipated here) are considered to be of low severity, with no lasting biological consequences. Since both the sources and marine mammals are mobile, animals would only be exposed briefly to a small ensonified area that might result in take. Additionally, required mitigation measures would further reduce exposure to sound that could result in more severe behavioral harassment.

In summary and as described above, the following factors primarily support our preliminary determination that the impacts resulting from this activity are not expected to adversely affect the species or stock through effects on annual rates of recruitment or survival:

- No mortality or serious injury is anticipated or proposed for authorization;
- No Level A harassment (PTS) is anticipated, even in the absence of mitigation measures, or proposed for authorization;
- Foraging success is not likely to be significantly impacted as effects on species that serve as prey species for marine mammals from the survey are expected to be minimal;

- The availability of alternate areas of similar habitat value for marine mammals to temporarily vacate the survey area during the planned survey to avoid exposure to sounds from the activity;
- Take is anticipated to be primarily Level B behavioral harassment consisting of brief startling reactions and/or temporary avoidance of the survey area;
- While the survey area is within areas noted as migratory and feeding area BIAs and designated critical habitat for NARWs, the activities would occur in such a comparatively small area such that any avoidance of the survey area due to activities would not affect migration or feeding. In addition, mitigation measures to shut down at 500 m to minimize potential for Level B behavioral harassment would limit the severity of any take that occurs;
- While the survey area is within areas noted as feeding area BIAs for large whales, the activities would occur in such a comparatively small area such that any avoidance of the survey area due to activities would not affect prey availability or foraging activities.
- The proposed mitigation measures, including visual monitoring and shutdowns, are expected to minimize potential impacts to marine mammals.

Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the proposed monitoring and mitigation measures, NMFS preliminarily finds that the total marine mammal take from the proposed activity will have a negligible impact on all affected marine mammal species or stocks.

Small Numbers

As noted above, only small numbers of incidental take may be authorized under sections 101(a)(5)(A) and (D) of the MMPA for specified activities other than military readiness activities. The MMPA does not define small numbers and so, in practice, where

estimated numbers are available, NMFS compares the number of individuals taken to the most appropriate estimation of abundance of the relevant species or stock in our determination of whether an authorization is limited to small numbers of marine mammals. When the predicted number of individuals to be taken is fewer than one third of the species or stock abundance, the take is considered to be of small numbers. Additionally, other qualitative factors may be considered in the analysis, such as the temporal or spatial scale of the activities.

NMFS proposes to authorize incidental take of 16 marine mammal species. The total amount of takes proposed for authorization relative to the best available population abundance is less than 9 percent for NARW, less than 6 percent for common dolphin, less than 4 percent for humpback whales, and less than 2 percent for all other species and stocks, which NMFS preliminarily finds are small numbers of marine mammals relative to the estimated overall population abundances for those stocks. Please see Table 5.

Based on the analysis contained herein of the proposed activity (including the proposed mitigation and monitoring measures) and the anticipated take of marine mammals, NMFS preliminarily finds that small numbers of marine mammals will be taken relative to the population size of the affected species or stocks.

Unmitigable Adverse Impact Analysis and Determination

There are no relevant subsistence uses of the affected marine mammal stocks or species implicated by this action. Therefore, NMFS has determined that the total taking of affected species or stocks would not have an unmitigable adverse impact on the availability of such species or stocks for taking for subsistence purposes.

Endangered Species Act

Section 7(a)(2) of the Endangered Species Act of 1973 (ESA: 16 U.S.C. 1531 *et seq.*) requires that each Federal agency insure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any endangered or

threatened species or result in the destruction or adverse modification of designated critical habitat. To ensure ESA compliance for the issuance of IHAs, NMFS Office of Protected Resources (OPR) consults internally whenever we propose to authorize take for endangered or threatened species, in this case with NMFS Greater Atlantic Regional Fisheries Office (GARFO).

NMFS is proposing to authorize the incidental take of five species of marine mammals which are listed under the ESA, including the North Atlantic right, fin, sei, and sperm whale, and has determined that these activities fall within the scope of activities analyzed in GARFO's programmatic consultation regarding geophysical surveys along the U.S. Atlantic coast in the three Atlantic Renewable Energy Regions (completed June 29, 2021; revised September 2021). The consultation concluded that NMFS' issuance of incidental take authorization related to these activities are not likely to adversely affect ESA-listed marine mammals.

Proposed Authorization

As a result of these preliminary determinations, NMFS proposes to issue an IHA to PCW for conducting marine site characterization surveys off the coast of Massachusetts south to Long Island, New York for one year from the date of issuance, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated. A draft of the proposed IHA can be found at www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act.

Request for Public Comments

We request comment on our analyses, the proposed authorization, and any other aspect of this notice of proposed IHA for the proposed marine site characterization surveys. We also request at this time comment on the potential renewal of this proposed IHA as described in the paragraph below. Please include with your comments any

supporting data or literature citations to help inform decisions on the request for this IHA or a subsequent Renewal IHA.

On a case-by-case basis, NMFS may issue a one-time, one-year Renewal IHA following notice to the public providing an additional 15 days for public comments when (1) up to another year of identical or nearly identical, or nearly identical, activities as described in the **Description of Proposed Activity** section of this notice is planned or (2) the activities as described in the **Description of Proposed Activity** section of this notice would not be completed by the time the IHA expires and a renewal would allow for completion of the activities beyond that described in the *Dates and Duration* section of this notice, provided all of the following conditions are met:

- A request for renewal is received no later than 60 days prior to the needed Renewal IHA effective date (recognizing that the Renewal IHA expiration date cannot extend beyond one year from expiration of the initial IHA).

- The request for renewal must include the following:

- (1) An explanation that the activities to be conducted under the requested Renewal IHA are identical to the activities analyzed under the initial IHA, are a subset of the activities, or include changes so minor (*e.g.*, reduction in pile size) that the changes do not affect the previous analyses, mitigation and monitoring requirements, or take estimates (with the exception of reducing the type or amount of take).

- (2) A preliminary monitoring report showing the results of the required monitoring to date and an explanation showing that the monitoring results do not indicate impacts of a scale or nature not previously analyzed or authorized.

Upon review of the request for renewal, the status of the affected species or stocks, and any other pertinent information, NMFS determines that there are no more than minor changes in the activities, the mitigation and monitoring measures will remain the same and appropriate, and the findings in the initial IHA remain valid.

Dated: May 24, 2022.

Kimberly Damon-Randall,

Director, Office of Protected Resources,

National Marine Fisheries Service.

[FR Doc. 2022-11485 Filed: 5/26/2022 8:45 am; Publication Date: 5/27/2022]